outside atmosphere into at least one of said at least two cylinders, compressed there, transferred to another at least one of said at least two cylinders, subjected to at least one additional compression, and displaced into said air-reservoir means for storage therein,

whereby energy of the vehicle motion is transformed into energy of compressed air stored in said air-reservoir means,

whereby said at least one additional compression increases said vehicle braking force, and whereby an increase in temperature of said air, associated with said at least one additional compression, reduces the mass of air required to absorb said energy of vehicle motion and reduces the required volume of said air-reservoir means,

and

(e) operating said engine in a prime mover mode propelling said vehicle when vehicle propulsion force is needed, said prime mover mode including:

(A) operating said engine in a mode selected from a variety of propulsion modes comprising:

(1) a first propulsion mode including repeated performance of a multi-stage air-motor cycle, during which a charge of compressed air is received from said air-reservoir means, subjected to at least two successive stages of expansion in said at least two cylinders, and exhausted into said outside atmosphere, whereby said vehicle is propelled without any fuel being consumed,

(2) a second propulsion mode comprising:

- repeated performance of a two-stroke air-motor cycle in at least one of said at least two cylinders, said two-stroke air-motor cycle including a first stage of expansion of a compressed-air charge received from said air-reservoir means into said cylinder chamber and expulsion of said compressed-air charge from said cylinder chamber, and
- repeated performance of a hybrid four-stroke cycle in another at least one of said at least two cylinders, said hybrid four-stroke cycle comprising two power strokes:

a first power stroke including a second stage of expansion of said compressed-air charge during a first volume-increasing stroke, and a second power stroke including expansion of combustion gas, produced as a result of fuel combustion, in said cylinder chamber during a second volume-increasing stroke, whereby work performed during said first power stroke is added to work performed during said second power stroke,

(3) a third propulsion mode comprising:

- repeated performance of a two-stroke air-motor cycle in at least one of said at least two cylinders, said two-stroke air-motor cycle including a first stage of expansion of a compressed-air charge received from said air-reservoir means into said cylinder chamber and expulsion of said compressed-air charge from said cylinder chamber, and
- repeated performance of a hybrid two-stroke internal-combustion cycle in another at least one of said at least two cylinders, during which said compressed-air charge is received into said cylinder chamber and used for combustion during the same cycle, whereby energy of said compressed-air charge supplements the energy released in combustion,

(4) a fourth propulsion mode including operating said engine in a conventional internal-combustion mode receiving air from said outside atmosphere, and

(B) changing said engine operation from one propulsion mode to another one selected from said variety of propulsion modes.

2. (Amended) The method of claim 1 further including the steps of:

(a) providing a head mounted to said at least two cylinders,

(b) providing a piston within each said cylinder chamber, with the piston to head and cylinder relationship being such that the volume of said cylinder chamber shrinks during a volume-decreasing stroke, when said piston moves toward said head, and

expands during a volume-increasing stroke, when said piston moves away from said head,

(c) providing a fuel delivery means for selectively and variably adding fuel to the air intended for participation in combustion in said engine in timed relation to said engine operation,

(d) providing means for allowing a vehicle driver to perform vehicle control functions including:

(1) selectively demanding a vehicle braking force,

(2) selectively demanding a vehicle propulsion force,

(3) selectively demanding a change in magnitude of said vehicle braking force, and

(4) selectively demanding a change in magnitude of said vehicle propulsion force, and

(e) providing a control means for controlling the operation of said engine and said vehicle in response to driver's demands and in accordance with a control program incorporated in said control means.

10. (Amended) The method of claim 1 wherein the step of providing an engine including at least two cylinders further includes the steps of:

(a) providing at least one primary cylinder for performing a first stage of air compression when said engine operates in said compression-braking mode, and for performing a second stage of air expansion when said engine operates in said first, second, and third propulsion modes, and

(b) providing at least one secondary cylinder for performing a second stage of air compression when said engine operates in said compression-braking mode, and for performing a first stage of air expansion when said engine operates in said first, second, and third propulsion modes.

11. (Amended) The method of claim 1 wherein the step of providing said gas exchange controlling means further comprises the steps of:

(a) providing a manifold means for accommodating gas flow into, inside, and out of said engine, said manifold means including:

(1) at least one low-pressure manifold connected to said outside atmosphere,

(2) at least one medium-pressure manifold,

(3) at least one high-pressure manifold connected to said air-reservoir means, and

(4) at least one exhaust manifold connected to said outside atmosphere,

and

(b) providing valves for selectively, variably, and alternatively connecting said cylinder chamber to said manifold means in timed relation to said engine operation.

Please withdraw claims 20-43 and 45-47.

Please add new claim 48 as follows:

48. (New) A method of operating a wheeled vehicle, said method comprising the steps of:

(a) providing an engine mounted in said vehicle and coupled to at least one vehicle wheel for its propulsion and braking, said engine including at least two cylinders and a cylinder chamber within each of said at least two cylinders,

(b) providing an air-reservoir means mounted in said vehicle and connected to said engine for receiving, storage, and discharge of compressed air,

(c) providing means for accommodating gas flow between at least one of said at least two cylinders and another at least one of said at least two cylinders, and for accommodating gas flow between said engine and said air-reservoir means,

(d) operating said engine in a compression-braking mode, during vehicle braking, by repeatedly performing a compression-braking cycle, during which air is received into at least one of said at least two cylinders, compressed there, transferred to another at least one of said at least two cylinders, subjected to at least one additional compression, and displaced into said air-reservoir means for storage therein,

whereby energy of the vehicle motion is transformed into energy of compressed air stored in said air-reservoir means,

whereby said at least one additional compression increases said vehicle braking force, and

whereby an increase in temperature of said air, associated with said at least one additional compression, reduces the mass of air required to absorb said energy of vehicle motion and reduces the required volume of said air-reservoir means,

and

(e) receiving compressed air from said air-reservoir means into said engine and using said compressed air to assist said engine in propelling said vehicle during vehicle propulsion.